

Isotria medeoloides

Status

Federal status: G2 N2, Threatened

NH state status: S2, Endangered; proposed for threatened status (5/03)

ME state status: S2, Endangered

Only plant species on the WMNF that is on the federal endangered and threatened species list. It also is on state endangered species lists in most states where it has been documented. Long-term monitoring of several colonies in New Hampshire, Virginia, and North Carolina shows gradual decline in numbers and vigor. One study of four sites in Maine documented an overall population decline, though some other populations have expanded in recent years. Monitoring of WMNF sites indicates an apparent increase in numbers in both colonies at one site, and stable numbers or a slight decline at the second site.

The expert panel estimated that range-wide this species is at a C to D outcome but improving with increased protection. On the WMNF, they felt it is currently at a C outcome, but could move toward a D because the Forest is at the northern edge of the species' range, populations are small and vulnerable, and the species may require regular habitat management.

Distribution

Isotria medeoloides occurs in Ontario, from Michigan to Maine, south to Georgia, and historically in Missouri.

In 2003, NHNHI indicated that there are 43 occurrences in the state, including 36 extant, 5 historic, 1 extirpated, and 1 transplanted. 20 of the 36 extant occurrences are ranked "D" and 18 of the extant sites have some level of protection, including two occurrences on the WMNF. Both WMNF occurrences in New Hampshire are in Albany. One has a ranking of "C" and the other is ranked "D." In Maine it is documented in Oxford, York, Cumberland, and Kennebec Counties. One extant occurrence is documented from the southeastern edge of the Forest in Stoneham, Maine. This occurrence is a single plant on a trail, seen in 1997. The remaining Oxford County occurrences are south of the Forest.

Habitat

Isotria medeoloides occurs both in fairly young forests and in maturing stands of mixed-deciduous or mixed-deciduous/coniferous forests. It typically occurs at low elevations on moderate slopes. Characteristics common to most *I. medeoloides* sites include sparse to moderate ground cover in the species' microhabitat, a relatively open understory canopy, and proximity to features that create long persisting breaks in the forest canopy. Soils at most New England sites are highly acidic and nutrient poor, with moderately high soil moisture values. Elsewhere in its range (ie NY, MO, Ontario) *Isotria* has been documented on somewhat richer, more calcareous sites.

Openings in the canopy that increase the amount of light reaching the forest floor may benefit the species. However mean percent canopy cover (estimated subjectively) in one NH and ME study was 86%, implying a preference for forest interior habitat with small

canopy gaps. It is unknown if light from canopy breaks is necessary or just used opportunistically where soil conditions are right. Plants are often found near canopy gaps created by old logging roads, streams, cutover areas and small wind, ice, or insect and disease disturbances.

Limiting Factors

While canopy gaps may be beneficial, too much of a change in canopy closure from any disturbance can negatively affect habitat conditions and increase competition. The primary threat to this species is habitat destruction for residential or commercial development or forestry. Collecting can still be regarded as a factor in the partial or complete destruction of individual *I. medeoloides* colonies. Threats such as recreational use of the habitat, deer and slug herbivory, and inadvertent damage from research and other activities have also been identified as harming populations. At the present time deer and slug herbivory and forest succession do not appear to be significant threats to larger populations, but the expert panel expressed strong concern for small populations like those on the WMNF.

Viability concern

As a federally listed species, viability is certainly a concern for the species as a whole. The WMNF is at the northern edge of this species' range. Populations are small and vulnerable, so local experts believe local viability also is a concern.

Management activities that might affect populations or viability

The importance of canopy gaps and increased light availability is uncertain. Clearcutting or similar intensive canopy removal that encompasses an *Isotria medeoloides* is believed to be detrimental. Canopy removal near, but not all around, a population has resulted in increased plant vigor in the short-term. Creation of small canopy gaps through natural or human disturbance also has apparently improved population health. Based on this information, even-aged regeneration harvest and recreational or other development around a population would negatively impact the population. Thinning, single tree selection, or carefully placed group selection harvests could be beneficial.

Road or trail construction opens the canopy and may increase light to a population, but may also increase human and animal traffic, which could be detrimental.

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